

REMARKS

New claims 24-39 are currently pending in the application and claims 1-18 have been cancelled. New claims 24-39 have been added to more particularly point out that the boss and the end cap of the shutter assembly are integrally formed. Support for new claims 24-39 can be found at least in paragraphs [0033], [0035], [0115] and [0123] of the as published application and Fig. 17c, in the originally filed claims and figures and throughout the specification.

Accordingly, no new matter has been added to the application as a result of the addition of new claims 24-39.

The below remarks are related to the pending final Office Action, dated May 23, 2007, in as much as the rejections relate to new claims 24-39 and the selected cited references of the present application.

Claim Rejections

Claim Rejections – 35 U.S.C. § 102

The Examiner rejected claims 1-3, 5-13, 15, 17 and 18 under 35 U.S.C. § 102(b) as being anticipated by European Patent No. 119,369 (Balsamo). The Examiner asserts that Balsamo discloses each and every element of claims 1-3, 5-13, 15, 17 and 18. Applicants respectfully submit that the rejection of claims 1-10 is moot in view of the cancellation of claims 1-10.

Claim Rejections – 35 U.S.C. § 103(a)

The Examiner rejected claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Balsamo in view of U.S. Patent No. 6,499,255 (Givoni). Applicant respectfully submits that the rejection of claim 4 is moot in view of the cancellation of claim 4.

New claims 24-39

Applicants have added claims 24-39. Applicants respectfully submit that new claims 24-39 are patentable over the cited art. Specifically, none of the prior art reference disclose, teach or suggest a boss and shutter assembly where the boss and the end cap are integrally formed, i.e. formed with a common material and the connection having no mechanical joint. In the cited art, as discussed further below, the connection between the boss and the shutter blade includes a

mechanical joint. It is advantageous to have the boss and end cap as an integral single piece for at least the reason that forming the boss and end cap as an integral piece reduces the time and cost of manufacture, installation/assembly, and to minimize the amount of play between moving parts within the shutter assembly.

Referring to Fig. 17a-17c of the present application, a turning mechanism 29 includes a handle 51 having a square sectioned spindle 52 adapted to rotatably co-operate with a worm 53 coaxially aligned with the spindle 52. When the handle 51 is rotated, the worm 53 also rotates. The spindle 52 is received through an aperture in a cover wall 54 of a housing 55. The worm 53 is rotatably mounted in a cylindrical bore or semi-cylindrical channel 56 of a gear housing 57. The gear housing 57 includes a toothed wheel gear 58 set for rotation in a tight fitting cylindrical bore in the gear housing 57 whereby the wheel gear 58 rotates about an axis normal to that of the worm 53. The square sectioned end 60 of the gear spindle 59 is adapted to engage a correspondingly square sectioned bore (not shown) set in an end cap 62. The end cap 62 is adapted to fit over the end of a shutter blade 27 (Fig. 12) as an end sleeve in a tight interference fit. The pinion gear or boss 61 is integrally formed with the end cap 62 (see also paragraphs [0033], [0035] and [0115] for a discussion of the preference that the boss 30, 61 integrally formed with the end cap 54, 62). Rotation of the end cap 62 causes the shutter blade 27 to rotate.

European Patent No. 119,369 (Balsamo)

Balsamo does not disclose teach or suggest every element of new claims 24-39. Specifically, the boss or cogwheel 12 of Balsamo does not directly connect a rack 13 to a blade 2, but requires a separately formed tooth-shaped pin 4 that provides a double male connection received in an aperture 12b of the cogwheel 12 and an opposed hole 3c1. This connection is complex and is described in detail in the passage at page 5, line 31 - page 6, line 12 and involves a spring 14 acting on the pin 4 through the hole 3c1, urging it into the frusto conical shaped aperture 12b in the cogwheel 12. Accordingly, the connection is not fixed, and there is considerable potential for significant play between the racks 11 and the blades 2, unlike claims 24-39 in which the unitary piece boss 61 integrally formed with the end cap 62 directly translates kinetic energy from the racks 33a, 34a to the blades 27, 50.

Additionally, the pin 4 of Balsamo is separately formed from the slats 2 and the cogwheel 12, whereby there is significant potential for play between these component parts. As described

in the present application with reference to Figure 17c, the integral formation of the boss 61 with the end cap 62 provides an arrangement in which there is reduced play between the boss and the blades because of the claimed arrangement.

U.S. Patent No. 6,499,255 (Givoni)

Givoni fails to disclose, teach or suggest every element of new claims 24-39. Specifically, referring to Fig 15, in Givoni, bosses (gears 58) connect the drive means (racks 64, 64') to the blades (light-blocking member 6) by a complex series of separately formed components known as an Oldham coupling. The gears 58 connect to a first coupling member 62A, which is in turn connected to a second coupling member 62B, which is in turn connected to a third coupling member 62C as shown in Fig. 15. There is potential for loss of energy through the series of connections so that greater force would be required to turn the blades 6 than would be required in the Applicant's claimed arrangement comprising a boss 61 integrally formed with the end cap.

DE 29704610 (Sassba)

In Sassba, it is unclear from the description as to how a cog 3, 8 connects to a blade 2 through a pin 7 that extends off center from an end plate 6 into the blade 2 as shown in figures 2 and 5, but also appear as the axial pins in association with the handle pinion 3 in figures 3 and 4. The cogs 3, 8 appear to be separately formed from the end sections 6 and are, therefore, not an integrally formed boss and end cap as is claimed in the present application.

U.S. Patent No. 6,854,211 (Blachley)

In Blachley, the end caps 900 attaching to the blades 420 are axially mounted by gears 920 and are not integrally formed as is claimed in the present application.

U.S. Patent 6,314,680 (Buckwater)

In Buckwater, the pinion gears 6 are thin, substantially elongate members that are axially aligned with the rotational axis of the louvers 8 and, therefore, do not have end caps, much less integrally formed end caps to create the mechanical advantage of the broad engagement of the end cap 62 to the blade 27, 50 of the present application. The pinion gears 6 are inserted in axial holes 7 of each associated louver 8, thereby placing a heavy loading on the small teeth of the pinions 6 and generally high torsional forces through the thin and elongate pinion 6 and exposing

the pinion 6 and its engagement to the axial hole 7 to likely mechanical failure. This mechanical fragility is exacerbated by the pinion gears 6 being preferably made of slightly flexible plastic thereby building significant play into the gearing mechanism. It also makes it more likely that the pinions 6 will eventually slip in engagement with the axial hole 7 as a result of repeated use. Accordingly, the gear arrangement of Buckwater would not be transferable to the arrangement of the present application and does not assist the skilled person in arriving at an arrangement of equal merit to the present application in terms of mechanical advantage and durability.

U.S. Patent No. 4,644,990 (Webb)

Webb does not include a rack and pinion mechanism or a boss/end cap arrangement similar to the present application, but includes cords 27 to drive pivoting of blades or louvers 22.

US 6145251 (Ricci)

In Ricci, referring to Figs. 1-9, the end cap of 22 of a slat 12 is axially mounted to the central gear 65 made up of a bracket 44 having a twin pin attachment to a cog wheel 65. The engagement to the blade 12 is therefore axial and a high load is placed on a support pin 26, which is held captive within the slat 12 and there is, therefore, potential for significant play between the support pin 26 and slat 12. The end cap 22 is not integrally formed with the central gear 65 but is connected thereto via an elaborate combination of pins 21 and brackets in pin pivot connection 44 (Fig. 7).

None of the above references or any of the additional cited references disclose each and every element of new claims 24-39. Applicants respectfully request that new claims 24-39 be allowed over the cited art for at least the reasons set forth above.

CONCLUSION

In view of the foregoing Amendment and remarks, Applicants respectfully submit that the present application, including new claims 24-39, is in condition for allowance and such action is respectfully requested.

Respectfully submitted,

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